



Analysis of Needs for Development of MOOCs-Based Digital Module to Increase Concept Understanding of Junior Students on The Matter of Breathing Systems

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Abstract

The purpose of this study was to analyze the needs of students in using MOOCs-based digital learning media for understanding concepts in junior high school students. The subjects of this research were 20 students of class VIII of SMPN 11 Bengkulu City. This research is a Research and Development or RnD research. The research instruments used are interview guidelines, observation sheets, and learner needs questionnaires. The results obtained are in the form of observation data, interviews with one of the science subject teachers, and questionnaires filled out by research subjects. data analysis techniques used in this study are using qualitative and quantitative techniques.

Keywords: Development, Learning Media, MOOCs, Concept Understanding, Respiratory System

A. Introduction

The current education system has used technology to innovate in learning. The use of technology aims to build classroom conditions to be more enjoyable and provide stimulation to students to be able to better understand learning. After the COVID-19 pandemic slowly subsided, many learning media have emerged that are used to support the learning process, for example one of them is a module, the module to be developed is a digital module that can be accessed through MOOCs, based on a statement from [1]. Moreover, students at this time are generation Z who are more able to absorb learning through audio-visual-based media [2]. The use of audio-visual-based media can stimulate students to pay more attention to learning. Because, audio-visual media is one of the media that is believed to be able to increase students' enthusiasm for learning, and besides, the use of this media is one of the alternative means for optimization in learning [3]. Science is a subject related to how to find out about nature systematically and find concepts that can be used in everyday life [4].

Learning media as a tool in realizing the success of the teaching and learning process which seems to have a big contribution to the teacher's victory in teaching. In addition to creating a happy atmosphere that is accepted by students, learning media also makes it easy for teachers to convey material and ease for students to receive it as a reciprocal of the process [5].

Learning that uses audio-visual media can be operated through any media. It can be through online or offline media. One of the audio-visual media that can be operated via the internet is MOOCs or Massive Open Online Courses. MOOCs is an interactive learning that is learning by using electronic device assistance services [6]. This digital module can be accessed by students using the internet, material or learning that is submitted in MOOCs in the form of modules presented in the form of videos, made creatively and innovatively to help students understand learning. Especially in the material of the respiratory system, in this respiratory system material many organs work in humans. In the human respiratory system there is a process of inhaling and exhaling called with inhale and exhale. In this respiratory system material, in the existing KD, students are required to be able to analyze and understand the material. Disorders and also maintaining health in the respiratory system, so that the concepts that will be conveyed to students need interesting tools so that students can understand the concepts of the respiratory system. According to [7] one of the goals of learning science is to develop and knowledge and understanding of science concepts that are useful and can be applied in everyday life. Concept



understanding is the ability a person has in understanding something. According to [8], students are said to understand the concept if students have captured the meaning or meaning of a concept.

In this respiratory system material, especially a lot of material related to biology and requires students to remember from parts of the organs, diseases, to how to maintain respiratory health, causing students to not be able to memorize at once, although there are some students who understand the material by memorizing and the rest have difficulty in understanding if delivered in a conventional way.

With the use of MOOCs media, it can provide learners with a real depiction of the organs that work in the human respiratory system, such as starting from the nose, larynx, pharynx, throat, trachea, bronchi, bronchiulus, and alveoli [9]. After that in the alveoli there is an exchange of oxygen with carbon dioxide which will be released through the nose. In this material, students cannot only listen to the explanation of what is conveyed by the teacher without any images or displays that support the explanation, therefore MOOCs are needed as an alternative learning media to provide real explanations and depictions so that students do not misunderstand, so as to be able to make students better understand the concepts in the respiratory system and they can explain in their own language interpreted in everyday life. In addition, because this material is suitable to be made using MOOCs.

This interactive learning media is a digital media that can present only visual, or audio-visual content. To use this learning media can be accessed through the internet using a laptop / mobile phone, so it must be ensured that the network and internet signal conditions are adequate to access the material in the learning media. The use of MOOCs has many advantages, such as being accessible anywhere, anytime, and without limits. In addition, the material to be watched can be watched repeatedly in order to understand better.

Based on the description above, research is needed with the title "Development of MOOCs-Based Learning Media to Improve Concept Understanding of Junior High School Students on Respiratory System Material" by going through a needs analysis to gather information so that the needs needed by students can be identified. This analysis is carried out to understand the gaps and problems that will exist in the final result, so that the media developed is in accordance with the problems that have been identified through this needs analysis.

B. Research Methods

This research will be conducted in class VIII of SMPN 11 BENGKULU CITY. This research is a type of R&D (Research and Development) research. The subjects of this research are students of class VIII B SMPN 11 BENGKULU CITY. Data collection uses qualitative and quantitative data types through observation, interviews, and distributing questionnaires through google forms to students, so that students can fill out questionnaires online. The period for filling out the questionnaire was carried out from February 1-2, 2023. The measurement scale used in the questionnaire is the Likert scale [10], for data with a Likert scale can be calculated using the following formula:

$$P = \frac{\sum R}{N} \times 100\%$$

According to [11] where, P is the percentage of students' responses, $\sum R$ is the number of answers given by students, and N is the maximum or ideal score. The following is the Likert calculation scale

Table 1. Likert Scale Calculations

Score	Description
1	Strongly Disagree
2	Disagree
3	Agree
4	Strongly Agree

The percentage eligibility obtained is then interpreted into the eligibility criteria based on the following table

Table 2. Interpretation of Learners' Response Score

Score Interpretation	Category
0%-25%	Strongly Disagree
26%-50%	Disagree



Score Interpretation	Category
51%-75%	Agree
76%-100%	Strongly Agree

C. Result and Discussion

The following are the results of the needs analysis that has been obtained through filling out a questionnaire through google form on February 1-2, 2023 with the number of respondents is 20. In the initial question of the needs analysis asked about the respondent's identity briefly such as name and absence number, the next question has asked about E-Learning.

Based on the results of this analysis in the second aspect of needs, 50% of respondents still have difficulty understanding science learning. In the aspect of need number three, 65% of respondents strongly agreed that learning media helps them in learning, so in the aspect of need number seven, 65% agreed, they need alternative learning media at this time. Therefore, in aspect number nineteen, 75% of respondents agreed with the use of E-Learning digital learning media, and also by using digital interactive learning that can be accessed via laptop / mobile phone unlimitedly, anytime, and anywhere as many as 55% of respondents agreed on this. Thus, based on respondents' assessment of learning media development, respondents agreed to the use of MOOCs-based learning media as an alternative learning media.

I have difficulty understanding science learning

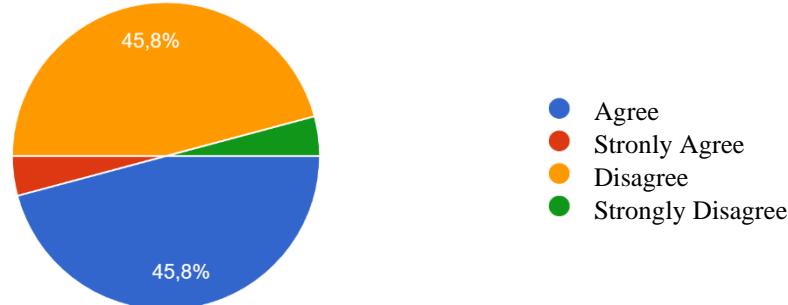


Figure 1

Learning media helps me learn

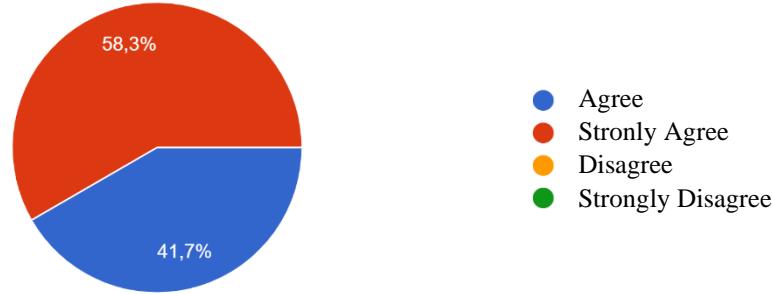


Figure 2



I need other learning media as an alternative to current learning media

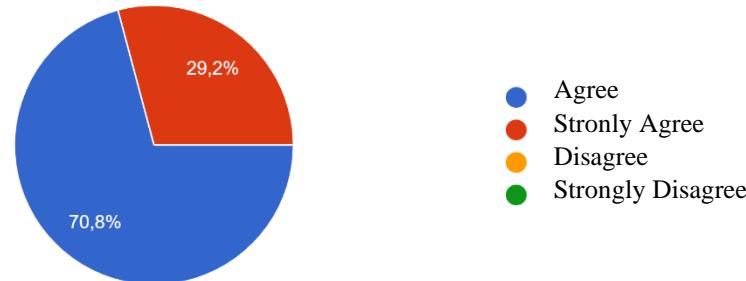


Figure 3

I agree with the use of digital learning media that is designed with an attractive appearance called E-Learning.

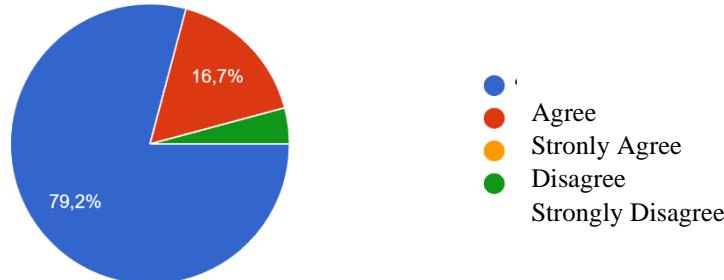


Figure 4

I agree that digital learning, E-Learning, can be accessed through Laptop/HP freely, anytime, and anywhere.

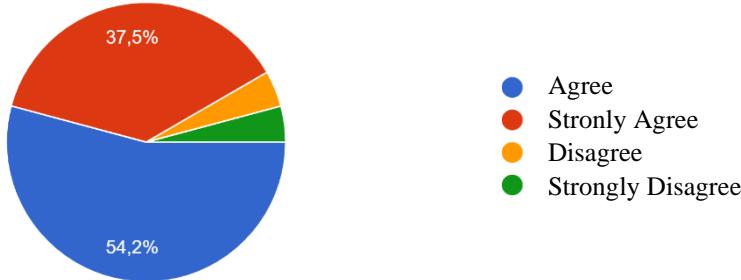


Figure 5

In addition to the questionnaire data, from the interview data, some students stated that they did not understand some of the material, most students did not understand the concept. In this respiratory system material, especially a lot of material related to biology and requires students to remember parts of the organs, diseases, to how to maintain respiratory health, causing students to not be able to memorize at once, although there are some students who understand the material by memorizing and the rest have difficulty in understanding if delivered in a conventional way. This is reinforced by the results of observations that have been made, in class VIII SMP N 11 KOTA BENGKULU, especially in chapters with material that has a lot of memorization, students are only ordered to bring, explain in front of the teacher and friends, get grades, be explained the material, and given assignments, this is due to the demands of the teacher to complete the material according to the curriculum targets, so inevitably forcing students to accept concepts that may not be fully understood, in line with the statement from [12]. In addition, school facilities such as



laboratories are not used optimally, so that material that requires practicum can only be done in class or students do at home. This is in accordance with the statement [13], the provision of science material will not take place optimally if the teacher provides explanations in textbooks alone, because some materials have limitations both in making observations, as well as space and time constraints. Based on this statement, it is necessary to use MOOCs, as a platform that can be accessed at any time that displays open learning resources, especially on respiratory system material, making it easier for students to understand the concept of the material [14]. Module is a type of unit of learning activity that is planned and designed by the teacher to assist students in achieving certain goals [15].

D. Conclusion

Based on the results of this research, a needs analysis that can be useful to determine the interest of students in MOOCs-based learning media, so that according to the results that have been obtained, and identified several problems with the learning media that have been used, namely, the use of the current learning media makes the classroom atmosphere ordinary, causes some students to be active in the learning process, and makes only a few students who can understand the concept of learning and can also arouse the enthusiasm of students to be able to learn independently. In addition, learning using videos has been shown to improve students' understanding of explanations. So it can be concluded that students agree to the development of this digital module.

References

- [1] R. S. Achya, R. Inggi, dan L. O. Bakrim, "Perancangan Dan Implementasi Aplikasi Massive Open Online Course (MOOC) Modul Certificate Dan Ceremony," *Simkom*, vol. 7, no. 1, hal. 50–62, 2022, doi: 10.51717/simkom.v7i1.75.
- [2] C. Pratama, Kaspul, dan M. Arsyad, "Pengembangan Media Pembelajaran Interaktif Berbasis Aplikasi Android Pada Konsep Sistem Pernapasan Manusia Jenjang SMA," *J. Progr. Stud. Pendidik. Biol.*, vol. 10, no. 2, hal. 16–23, 2020.
- [3] L. Pradilasari, A. Gani, dan I. Khaldun, "Pengembangan Media Pembelajaran Berbasis Audio Visual pada Materi Koloid Untuk Meningkatkan Motivasi dan Hasil Belajar Siswa SMA," *J. Pendidik. Sains Indones.*, vol. 7, no. 1, hal. 9–15, 2019, doi: 10.24815/jpsi.v7i1.13293.
- [4] I. Ismail, "Upaya Meningkatkan Pemahaman Organ Pernapasan Manusia Melalui Implementasi Model Demonstrasi pada SD Negeri 5 Teunom," *J. Serambi Akad.*, vol. 7, no. 4, hal. 453–462, 2019, [Daring]. Tersedia pada: <http://jurnal.serambimekkah.ac.id/serambi-akademika/article/view/1388>
- [5] U. Setiawan *et al.*, *Media Pembelajaran (Cara Belajar Aktif: Guru Bahagia Mengajar Siswa Senang Belajar)*. 2022.
- [6] B. R. Oksatianti, E. Risdianto, dan A. Mayub, "Pengembangan pembelajaran daring berbasis," *Ilmu Pembelajaran Fis.*, vol. 1, no. 2, hal. 174–181, 2020.
- [7] F. N. Kumala, *Pembelajaran IPA Sekolah Dasar*, vol. 8, no. 9. 2016.
- [8] D. Salim Nahdi, D. A. Yonanda, dan N. F. Agustin, "Upaya Meningkatkan Pemahaman Konsep Siswa Melalui Penerapan Metode Demonstrasi Pada Mata Pelajaran Ipa," *J. Cakrawala Pendas*, vol. 4, no. 2, hal. 9, 2018, doi: 10.31949/jcp.v4i2.1050.
- [9] L. Mufidah, "Validitas Media Pembelajaran Berbasis Web pada Materi Sistem Pernapasan Manusia Kelas VIII di SMP Lailatul Mufidah * , Mohammad Wildan Habibi Program Studi Tadris Ilmu Pengetahuan Alam , Fakultas Tarbiyah dan Ilmu Ke," *Bioeduca J. Biol. Educ.*, vol. 4, hal. 57–66, 2022.
- [10] S. A. Tambunan, "Analisa Kebutuhan Pengembangan Media Pembelajaran Pada Mata Pelajaran Konstruksi Dan Utilitas Gedung Di Kelas Desain Permodelan Dan Informasi Bangunan Smk Negeri 1 Percut Sei Tuan," *J. Pendidik. Tek. Sipil*, vol. 3, no. 1, hal. 23–27, 2021, doi: 10.21831/jpts.v3i1.41883.
- [11] S. Purwanti dan R. Z. Anggraini Putri, "Pengembangan Modul Berbasis Hots Pada Tema 6 Materi Membandingkan Siklus Makhluk Hidup Kelas Iv Sekolah Dasar," *Elem. Sch. J. Pendidik. dan Pembelajaran ke-SD-an*, vol. 8, no. 1, hal. 155–160, 2021, doi: 10.31316/esjurnal.v8i1.1080.
- [12] N. P. A. P. Mijaya, A. A. I. A. R. Sudiatmika, dan I. N. Suwardana, "Pengembangan E-Modul Pembelajaran Ipa Smp Kelas Vii Berbasis Model Pembelajaran Levels of Inquiry Untuk Meningkatkan Literasi Sains Siswa," *Quantum J. Inov. Pendidik. Sains*, vol. 12, no. 2, hal. 220,



2021, doi: 10.20527/quantum.v12i2.11258.

[13] E. M. Pratiwi, G. Gunawan, dan I. Ermiana, “Pengaruh Penggunaan Video Pembelajaran terhadap Pemahaman Konsep IPA Siswa,” *J. Ilm. Profesi Pendidik.*, vol. 7, no. 2, hal. 381–386, 2022, doi: 10.29303/jipp.v7i2.466.

[14] E. Risdianto, “MOOCs SEBUAH TREN PENDIDIKAN MASA DEPAN,” *Pros. Semin. Nas. ...*, hal. 7–12, 2021, [Daring]. Tersedia pada: <https://jurnal.univpgri-palembang.ac.id/index.php/Prosidingspps/article/view/5465>

[15] E. Kosasih, *Pengembangan Bahan Ajar*. Jakarta: Bumi Aksara, 2021. [Daring]. Tersedia pada: https://www.google.co.id/books/edition/Pengembangan_Bahan_Ajar/UZ9OEAAAQBAJ?hl=id&gbpv=1&dq=buku+pengembangan+modul+digital&printsec=frontcover